REMARKS

I. Status Of The Claims.

Claims 1-40 are pending in the Application. Claims 2-3 and 14-38 are withdrawn and Claims 1, 4-13 and 39 are rejected.

II. Claim Amendments.

Claims 1 and 39.

Claims 1 and 39 have been amended to clarify Applicants' invention. Claim 1 requires "spaced electrodes in electrical communication with said fluid for applying a potential difference end-to-end across said porous dielectric material within said channel; . . whereby said potential difference generates an electroosmotically-driven flow component through said channel that modulates a pressure-driven flow component resulting from the P1 – P2 pressure differential for controlling the flow through the channel." Claim 39 has been rewritten for format and amended similarly to Claim 1. Applying a potential difference end-to-end across a porous dielectric material to produce an electroosmotic flow. This is described on page 8, lines 24-28 of the specification. Accordingly, these amendments do not add new matter.

New Claim 41.

New Claim 41 is described on page 4, lines 5-30. Accordingly, no new matter is added by new Claim 41.

III. Applicants' Invention.

Applicants' Invention is for an electroosmotic flow controller that controls fluid flow through a combination of electroosmotic flow (EOF) and pressure driven flow (PDF). In effect, flow control is provided by varying the degree of electroosmotic "assist", either in the positive or negative direction, to the pressure driven flow through the channel. An advantage of Applicants' invention is that rapid and accurate flow control can be affected over a wide range of flow rates, both high and low. Further, the flow controller can be used in microscale devices with few or no moving parts and the devices will be compatible with most solvents.

IV. The Rejection under 35 U.S.C. § 103(a).

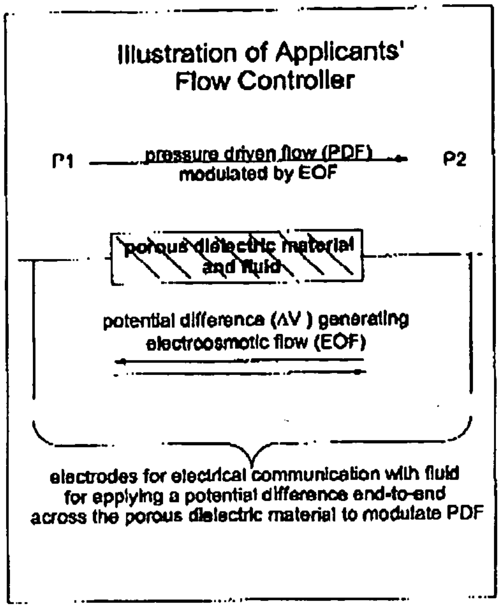
The Office has rejected Claims 1, 4-13, and 39 under 35 U.S.C. § 103(a) as being unpatentable over Rhodes et al. (US 6,004,443) in view of Paul et al. (US 6,019,882) for the reasons stated in numbered paragraph 6 of the Office Action.

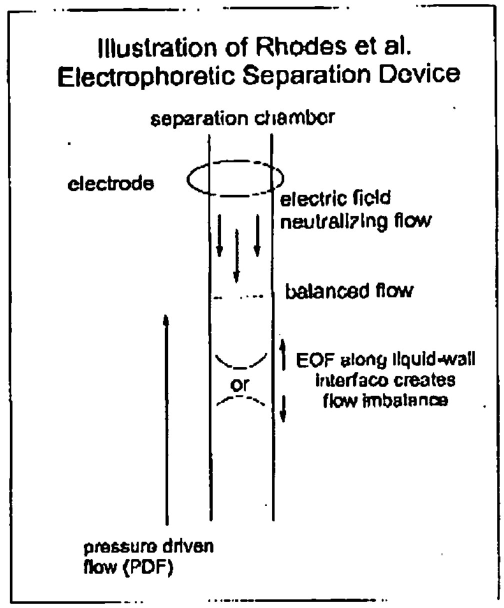
Applicants respectfully traverse the rejection of independent Claims 1 and 39 and request withdrawal of the rejection and allowance of Claims 1 and 39 and Claims 4-13, depending from Claim 1, based on the following remarks.

A. The References Do Not Teach Or Suggest All The Claimed Limitations.

Independent Claims 1 and 39 are limited, in varying language, to spaced electrodes for applying a potential difference end-to-end across said porous dielectric material within a channel, whereby the potential difference generates an electroosmotically-driven flow component through the channel that modulates a pressure-driven flow component. Neither Rhodes et al., nor Paul et al., alone or in combination describe this limitation of Applicants' invention. Accordingly, the Office has not established a *prima facie* case of obviousness.

As shown by the following illustration, in Applicants' claimed flow controller and method for controlling a flow of a fluid, an electroosmotic flow (EOF) component is generated, which modulates, that is, adjusts or controls, a pressure driven flow (PDF) component. The flow controller has spaced electrodes for applying a potential difference end-to-end across a porous dielectric material within the channel. The potential difference generates the electroosmotic flow component within the channel, which modulates the pressure driven flow component. As described in the Specification, the electroosmotic flow can be in either direction depending on the nature of the fluid and the dielectric material. (*See, e.g.*, page 9, lines 21-26).





Rhodes et al., does not describe Applicant's claimed spaced electrodes for applying a potential difference end-to-end across a porous dielectric material within a channel, whereby the potential difference generates an electroosmotically-driven flow component through the channel that modulates a pressure-driven flow component.

As shown in the above illustration and described in the Specification, Rhodes et al. discloses an electrophoretic separation device for chromatographic sample separation in a chamber. The device uses pressure driven flow (PDF) for controllable flow in the column. (Col. 7, lines 43-55). An interaction between the charged solute molecules and the chamber walls creates an excess of positive charge, along the liquid-wall interface. The excess positive charge is attracted toward the cathode in the electrophoretic separation, which causes an EOF of liquid along the liquid-wall interface. Rhodes et al. teaches that an imbalance of these flow rates affects sample separation (*e.g.*, distorts the separation sample into a smile or frown). (Col. 8, lines 1-27). Rhodes et al. teaches ***neutralizing*** flow imbalance, that is, the differences in pressure across the chamber caused by flow imbalance from differing PDF and EOF across the chamber, either through computer control of an applied electric field and/or altering the pump rate (*i.e.*, the PDF rate) to achieve minimum sample dispersion across the

chamber, that is, to achieve the desired flat zone of separating sample. (Col. 17, lines 3-16).

To neutralize the flow imbalance in the chamber, Rhodes et al. describes applying an electrical field to one end of the separation chamber. The electrical communication in the device is shown in Figure 5, and is also described in col. 16, line 61 through col. 17, line 16; and col. 18, line 45 through col. 19, line 7.

As detailed above, Rhodes et al. does not teach or suggest Applicants' claimed limitation of applying a potential difference end-to-end across a porous dielectric material within a channel to generate an EOF, which modulates a pressure driven flow. Paul et. al does not remedy the deficiencies of Rhodes et al. Paul et al. does not teach modulating